

## Appendix A – Diagnostic Codes

### Codes for identifying events in the CPRD

Medcode	Read code	Read term
147	N322.00	Non traumatic slipped upper femoral epiphysis
47594	N322200	Non traumatic chronic slipped upper femoral epiphysis
67269	N322100	Non traumatic acute-on-chronic slipped upp femoral epiphysis
50844	N322000	Non traumatic acute slipped upper femoral epiphysis
69215	7K1M511	Fixation of epiphysis, usings adams hip pin

### Codes for identifying events in HES

ICD-10	Description
M93.0	Slipped upper femoral epiphysis (non traumatic)

### Practice Level Deprivation

- 2010 English Index of Multiple Deprivation<sup>[5]</sup>
- 2010 Northern Ireland Multiple Deprivation Measure (MDM)<sup>[8]</sup>
- 2009 Scottish Index of Multiple Deprivation<sup>[7]</sup>
- 2011 Welsh Index of Multiple Deprivation<sup>[6]</sup>

## **Appendix B - Validation of codes between the CPRD and HES datasets**

### **Level of validation**

- (1) (Diagnostic SCFE code within CPRD) AND (diagnostic SCFE code within HES OR specific procedural code pertaining to ‘fixation of the epiphysis’ within HES).
- (2) (Diagnostic code within HES OR CPRD) AND a similar code or code which may be erroneously used in the opposite dataset (femur fracture, hip fracture, dislocated hip, osteochondritis, slipped radial epiphysis).
- (3) (Diagnostic code within HES OR CPRD), AND (evidence in the other dataset of: (a) hospital admission within one month of the index date OR (b) relevant symptomatology (hip pain, knee pain, thigh pain, altered gait) preceding the diagnostic date).
- (4) (Diagnostic code within HES OR CPRD), WITHOUT any related codes in opposite dataset (or no linkage to opposite dataset) BUT with either (a) a clear temporal sequence of events (i.e. multiple entries including documented evidence of relevant symptoms, hospital admission, subsequent discharge codes), (b) recorded procedural codes pertaining to fixation of the hip/ epiphysis, (c) evidence of diagnostic code followed by regular (>3 visits) orthopaedic follow-up hospital attendances, (d) multiple entries of a diagnostic code representing SCFE.
- (5) Diagnostic code within HES OR CPRD, WITHOUT additional supportive evidence (as defined above) to ratify diagnosis.

### **Available Linkage**

Linkage between CPRD and HES was available for 357 of the 650 primary care providers contributing to the CPRD (HES does not cover Scotland, Wales or Northern Ireland, hence is not available at all in these sites, nor in a proportion of English primary care providers who do not contribute linked data). The link was therefore available for 394 cases.

## **Summary**

**86% diagnoses for whom CPRD-HES link was available had external validity (337/394).**

**88% (525/596) of all diagnostic codes had internal or external validity.**

**Cases with CPRD-HES Link available (n=394)**

<b>Proportion of patients falling within each validation category</b>		
<b>Validation category</b>	<b>Patients</b>	<b>Cumulative percentage</b>
1 – Greatest internal validity	234 (59%)	59
2	59 (15%)	74
3	44 (11%)	86
4	28 (7%)	93
5 – Lowest internal validity	29 (7%)	100
	<b>394 (100%)</b>	

**Cases without a CPRD-HES Link available (n=202)**

<b>Proportion of patients falling within each validation category</b>		
<b>Validation category</b>	<b>Patients</b>	<b>Cumulative percentage</b>
4 – Highest internal validity with data available (no-link established)	159 (79%)	79
5 – Lowest internal validity	43 (21%)	100
	<b>202 (100%)</b>	

## Appendix C – Identifying symptom codes

### **HIP/ Thigh SPECIFIC CODES - SYMPTOM AND EXAMINATION**

*Words searched in data dictionary*

*Hip, thigh, groin, femur*

286	Hip Pain
1330	Hip Joint Pain
1336	[D]Groin pain
1866	Thigh Pain
1873	[SO]Groin
2288	Other hip injuries
2589	Other thigh injuries
2633	Other Groin Injuries
2633	Other groin injuries
2695	Synovitis of the hip
3419	Groin Sprain
4460	Hip Stiff
4527	[SO]Thigh NEC
5416	Hip Sprain NOS
5918	Injury of adductor muscle and tendon of thigh
7806	O/E - hip joint abnormal
8898	Other hip sprain
9069	SO hip joint
9629	Hip Sprain
9641	SO Muscle of hip or thigh
10270	SO Femur
10623	Thigh sprain
10846	[SO]Hip region NEC
15146	Arthralgia of the pelvic region and thigh
15569	Other joint symptoms of the pelvic region and thigh
20646	Irritable Hip
23544	Other thigh sprain
23821	Injury of muscle and tendon at hip and thigh level
27541	Sprain, Hip Joint
27613	Walking difficulty due to pelvic region and thigh
31665	Sprain hip and thigh
33407	Arthralgia of Hip
35689	Irritable Hip
36520	Stiff joint NEC, of the pelvic region and thigh
42080	Stiff Hip NEC
48987	Other hip and thigh injuries
53916	[X]Injuries to the hip and thigh
57858	Other Hip and Thigh injuries

69883 Transient arthropathy of the pelvic region and thigh  
101106 [SO]Specified muscle of hip or thigh NEC  
44772 Thigh sprain NOS  
45244 O/E - thigh bone abnormal

### **KNEE SPECIFIC CODES - SYMPTOM ONLY**

*Words searched in data dictionary*

*Knee*

363 [V] Problem knee  
551 Knee Sprain  
554 Knee joint Pain  
  
4604 H/O knee problem  
9033 Prior problem knee  
9517 Knee pain  
3186 Knee sprain NOS  
5781 [SO]Knee joint  
6044 Arthralgia of knee  
6166 Anterior knee pain  
10389 Anterior Knee Pain  
29666 [SO]Knee region  
31575 Sprain of knee and leg  
35925 Other symptoms - knee  
52385 [X]Sprain and strain of other and unspecified parts of knee  
52979 Transient arthropathy-knee

### **GAIT CODES**

*Words searched in data dictionary*

*Limp; gait*

405 Gait Abnormality  
2582 O/E Limping Gait  
2882 O/E Limpong  
14714 [D]Gait abnormality NOS  
  
19052 [D]Ataxic gait  
32121 O/E - ataxic gait  
93421 Disorder of gait and/or balance present  
95802 [X]Other and unspecified abnormalities of gait and mobility

### **NON-SPECIFIC LEG PAIN**

*Words searched in data dictionary*

*Leg*

1219 Leg Pain  
5780 Pain in the leg  
11609 Pain in lower limb  
307 Other leg injury  
  
12039 SO Leg Region  
12222 Leg sprain NOS  
307 Other leg injury  
45798 [SO]Anterior aspect of thigh  
48841 [SO]Adductor muscle of thigh, unspecified



## **Appendix D – Identifying Comorbidity Codes**

*A systematic search of the CPRD data dictionary was performed by two individuals. The search was conducted based on predetermined keywords. Agreed codes are listed below.*

### **Hypothyroidism. Search terms within data dictionary ‘hypothyroid’.**

273	Hypothyroidism
718	Subclinical iodine-deficiency hypothyroidism
3290	Acquired hypothyroidism
3611	H/O: hypothyroidism
3941	Hypothyroidism NOS
10097	Congenital hypothyroidism
15743	Hypothyroidism resulting from para-aminosalicylic acid
19367	Hypothyroidism monitoring verbal invite
28735	Hypothyroidism monitoring administration
31612	Congenital hypothyroidism with diffuse goitre
38976	Iatrogenic hypothyroidism NOS
47521	Post ablative hypothyroidism
50275	Other postablative hypothyroidism
50860	Postinfectious hypothyroidism
51481	Congenital hypothyroidism NOS
51706	Postablative hypothyroidism NOS
56722	Premature puberty due to hypothyroidism
69290	Other specified congenital hypothyroidism
73107	[X]Other sp cified hypothyroidism
85661	Hypothyroidism monitoring telephone invitation
85955	Hypothyroidism clinical management plan
93159	Congenital hypothyroidism without goitre
94915	Hypothyroidism resulting from resorcinol
95830	Subclinical hypothyroidism
97090	Hypothyroidism resulting from phenylbutazone

code	term
1543	Down's syndrome - trisomy 21
10759	Down's syndrome NOS
18415	Trisomy 21
32010	Trisomy 21, mosaicism
42701	Trisomy 21, meiotic nondisjunction
1048	Isolated deficiency of growth hormone

code	term	
72850		
94479		
62951		
92956		
96458		
45099		
91102		
30425		
16662		
22490		
30547		
29679		
22472		
28809		
59684		
45087		
18904		
16935		
38466		
17048		
5527		
10932		0
1009		0
9706		0
1482		0
320		

**Renal Osteodystrophy** – This is usually a consequence of chronic end stage renal failure. We therefore chose to include codes pertaining severely reduced renal function or end-stage renal failure (CKD 4 and CKD 5), transplant, or dialysis. **Search terms ‘renal ost, ‘osteodys’, ‘chronic k’, ‘renal f’, ‘dialysis’, ‘kidney’. ‘transplant’. The osteodystrophy code will therefore be considered in isolation, and in combination with renal failure codes.**

29638	Renal osteodystrophy	
34637		0
350		0
512		0
2994		0
2996	Haemodialysis NEC	
2997	Transplantation of kidney	
5504	Transplantation of kidney NOS	
5911	[V]Kidney transplanted	
6712	End stage renal failure	
11745	Transplantation of kidney from live donor	

11773 Dialysis for renal failure  
 12479 Chronic kidney disease stage 4  
 20073 Renal dialysis  
 20196 H/O: renal dialysis  
 28158 Kidney dialysis with complication, without blame  
 30709 Insertion of temporary peritoneal dialysis catheter  
 30756 Continuous ambulatory peritoneal dialysis  
 45160 [V]Aftercare involving peritoneal dialysis  
 46438 [X] Peritoneal dialysis associated peritonitis  
 48639 Mechanical complication of dialysis catheter  
 52088 [V]Preparatory care for dialysis  
 52123 Intestinal dialysis  
 53852 End stage renal failure  
 55151 Autotransplant of kidney  
 60446 Care of haemodialysis equipment  
 60498 Reversing haemodialysis lines  
 66714 Renal dialysis with complication, without blame  
 70874 Other specified transplantation of kidney  
 72004 Excision of rejected transplanted kidney  
 72336 Priming haemodialysis lines  
 88597 Automated peritoneal dialysis  
 93366 Interventions associated with transplantation of kidney  
 95122 Chronic kidney disease stage 4 with proteinuria  
 95405 Chronic kidney disease stage 5 without proteinuria  
 95406 Chronic kidney disease stage 4 without proteinuria  
 95508 Chronic kidney disease stage 5 with proteinuria  
 99692 [V]Aftercare involving extracorporeal dialysis  
 104050 OS interventions associated with transplantation of kidney  
 104586 Flushing of peritoneal dialysis catheter  
 104905 Acute-on-chronic rejection of renal transplant  
 105724 Unexplained episode of renal transplant dysfunction  
 105787 Xenograft renal transplant

productnumber	class
34420	Thyroid Hormones
51718	Thyroid Hormones
37906	Thyroid Hormones
35998	Thyroid Hormones
13	Thyroid Hormones
42219	Miscellaneous Cough & Cold Preparations
45238	Thyroid Hormones
50190	Thyroid Hormones

47318 Thyroid Hormones  
11857 Thyroid Hormones  
10 Thyroid Hormones  
41413 Thyroid Hormones  
45270 Thyroid Hormones  
33084 Thyroid Hormones  
32072 Thyroid Hormones  
34402 Thyroid Hormones  
51477 Thyroid Hormones  
32073 Thyroid Hormones  
35912 Thyroid Hormones  
3941 Thyroid Hormones  
51487 Thyroid Hormones  
27688 Thyroid Hormones  
25566 Thyroid Hormones  
13973 Thyroid Hormones  
46928 Thyroid Hormones  
54303 Thyroid Hormones  
27266 Thyroid Hormones  
27448 Thyroid Hormones  
50345 Thyroid Hormones  
54370 Thyroid Hormones  
30271 Thyroid Hormones  
33976 Thyroid Hormones  
18198 Thyroid Hormones  
25567 Thyroid Hormones  
41519 Thyroid Hormones  
6494 Thyroid Hormones  
43739 Thyroid Hormones  
24994 Thyroid Hormones  
40244 Thyroid Hormones  
48454 Thyroid Hormones  
53167 Thyroid Hormones  
3940 Thyroid Hormones  
10132 Thyroid Hormones  
51717 Thyroid Hormones  
53764 Thyroid Hormones  
32915 Thyroid Hormones  
37844 Thyroid Hormones  
29466 Thyroid Hormones  
37863 Thyroid Hormones  
29182 Thyroid Hormones  
53683 Thyroid Hormones  
53184 Thyroid Hormones  
53083 Thyroid Hormones  
32075 Thyroid Hormones

53266 Thyroid Hormones  
36049 Thyroid Hormones  
27 Thyroid Hormones  
34220 Thyroid Hormones  
29660 Thyroid Hormones

### **Growth Hormone Therapy**

productnumber	class
42188	Anterior Pituitary Hormones - Corticotrophins
36149	Anterior Pituitary Hormones - Corticotrophins
18115	Anterior Pituitary Hormones - Corticotrophins
28150	Unknown
3424	Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens
29448	Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens
15111	Anterior Pituitary Hormones - Corticotrophins
31575	Anterior Pituitary Hormones - Corticotrophins
42407	Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens
46463	Anterior Pituitary Hormones - Corticotrophins
28469	Anterior Pituitary Hormones - Corticotrophins
19798	Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens
18553	Anterior Pituitary Hormones - Corticotrophins
25213	Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens
23090	Anterior Pituitary Hormones - Corticotrophins
46033	Anterior Pituitary Hormones - Corticotrophins
28735	Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens
47686	Anterior Pituitary Hormones - Corticotrophins
18090	Anterior Pituitary Hormones - Corticotrophins
45778	Anterior Pituitary Hormones - Corticotrophins
40347	Anterior Pituitary Hormones - Corticotrophins
23088	Anterior Pituitary Hormones - Corticotrophins
29454	Anterior Pituitary Hormones - Corticotrophins
21209	Anterior Pituitary Hormones - Corticotrophins
17600	Anterior Pituitary Hormones - Corticotrophins
14338	Anterior Pituitary Hormones - Corticotrophins
7230	Anterior Pituitary Hormones - Corticotrophins
7085	Anterior Pituitary Hormones - Corticotrophins
51004	Anterior Pituitary Hormones - Corticotrophins
26605	Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens
44293	Anterior Pituitary Hormones - Corticotrophins
3426	Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens
47314	Anterior Pituitary Hormones - Corticotrophins
6489	Anterior Pituitary Hormones - Corticotrophins
16820	Anterior Pituitary Hormones - Corticotrophins

31039 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens  
23803 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens  
1441 Anterior Pituitary Hormones - Corticotrophins  
14526 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens  
44951 Anterior Pituitary Hormones - Corticotrophins  
15573 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens  
19842 Anterior Pituitary Hormones - Corticotrophins  
37966 Anterior Pituitary Hormones - Corticotrophins  
17991 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens  
23829 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens  
3419 Anterior Pituitary Hormones - Corticotrophins  
18178 Anterior Pituitary Hormones - Corticotrophins  
24929 Anterior Pituitary Hormones - Corticotrophins  
16835 Anterior Pituitary Hormones - Corticotrophins  
33027 Anterior Pituitary Hormones - Corticotrophins  
26348 Anterior Pituitary Hormones - Corticotrophins  
26859 Anterior Pituitary Hormones - Corticotrophins  
15139 Anterior Pituitary Hormones - Corticotrophins  
54950 Anterior Pituitary Hormones - Corticotrophins  
30637 Anterior Pituitary Hormones - Corticotrophins  
46170 Anterior Pituitary Hormones - Corticotrophins  
48188 Anterior Pituitary Hormones - Corticotrophins  
16388 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens  
21698 Anterior Pituitary Hormones - Corticotrophins  
19855 Anterior Pituitary Hormones - Corticotrophins  
29613 Anterior Pituitary Hormones - Corticotrophins  
14530 Anterior Pituitary Hormones - Corticotrophins  
26850 Anterior Pituitary Hormones - Corticotrophins  
46165 Anterior Pituitary Hormones - Corticotrophins  
16563 Anterior Pituitary Hormones - Corticotrophins  
16344 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens  
31881 Anterior Pituitary Hormones - Corticotrophins  
4839 Anterior Pituitary Hormones - Corticotrophins  
29571 Unknown  
28766 Anterior Pituitary Hormones - Corticotrophins  
4598 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens  
45883 Anterior Pituitary Hormones - Corticotrophins  
16841 Anterior Pituitary Hormones - Corticotrophins  
40290 Anterior Pituitary Hormones - Corticotrophins  
32943 Unknown  
4594 Anterior Pituitary Hormones - Corticotrophins  
40793 Anterior Pituitary Hormones - Corticotrophins  
28574 Anterior Pituitary Hormones - Corticotrophins  
55330 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens  
26545 Anterior Pituitary Hormones - Corticotrophins  
14246 Anterior Pituitary Hormones - Corticotrophins

- 17831 Hypothalamic And Anterior Pituitary Hormones And Anti-oestrogens
- 14189 Anterior Pituitary Hormones - Corticotrophins
- 46881 Anterior Pituitary Hormones - Corticotrophins
- 42205 Anterior Pituitary Hormones - Corticotrophins